Minutes for the:

White Sands Complex (WSC)
TCP/IP Data Interface Service Capability (WDISC)
Project Review

Date: Friday, July 24, 1998
Location: Building 12 GSFC, Room N112, 9:00 A.M.

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Purpose:

The purpose of this presentation was to introduce the WDISC project, and generate an exchange of ideas and comments concerning the management and operation of this system.

Minutes:

Reine Chimiak opened the review with a high level overview of the project that included the objective of the WDISC, the concept architecture, the approach, the schedule and interdependencies, as well as the current status of documentation and development activities.

Following this introduction, Frank Weinstein addressed the requirements baseline, the operations concept, and scenarios. This section covered the WDISC configuration, the remote scheduling of the PTPs from the NCC, the real-time data flows and the logging and recovery of data files.

To minimize the loss of data in case of failure, the WDISC is providing complete redundancy of the system accomplished by the use of a remotely controlled switch and the acquisition of a prime and backup PTP at each ground terminal. Andre Fortin started with an overview of the redundancy capability and continued with a detailed presentation of the implementation diagrams of the switch.

Once configured, the testing of the system will be bi-phased. A configuration and internal testing phase in house, followed by acceptance and end-to-end testing upon delivery of the equipment at WSC.

 Tom Russell of the NIA team covered the second phase of the testing describing the testing approach and testing deliverables.

 The presentation concluded with demonstration of the PTP system given by Mary Ellen Orsino and Siragan Ozkan of the Avtec Company.

This review generated many informative ideas and comments. Following is a list of questions and responses that arose during the presentation:

1) Will the planned evolution into CCSDS standards require special hardware?
     Response: Unique hardware will not be required with the initial phase
of WDISC for CCSDS standards.

2) How many boards are required?
     Response: Each PTP is equipped with three processing boards to framesync and decode data and a time board. Each processing board is capable of handling a unique forward and a unique return data service. A board is not uniquely dedicated to one customer but part of a resource pool for any customer's request. A customer requesting forward and return services during the same event, however, will have to use the same board for both services.

3) Will the system use the special features of NCC 98?
     Response: the WDISC is independent of NCC98 and will be remotely operated as a standalone system from the NCC. However, for improved operability it is conceivable that the WDISC will be incorporated into NCC98 and automated to require no manual intervention.

4) Who will maintain the PTP's?
     Response: WSC personnel will maintain the PTP's. They will be in direct contact with the vendor. This maintenance will include any hardware issues as well as the configuration maintenance of software releases from Avtec, and changes to system administration files. The DBA at the NCC will be responsible for the maintenance of the desktops and responsible implementers will be responsible for the design of new desktops.

5) Will spares be provided?
     Response: Yes, the following will be sent to WDISC for sparing purposes:
One complete PTP system (a total of 5 PTPs will be shipped to WSC)
At least one bridge (for return services) and one set of switch boxes (bridge, codepal and switch)
One PC (a total of 2 PCs will be shipped to WSC) to do status monitoring from the TOCC.
A dialog is on going with Jim Edgington to assess the sparing need and level.

6) Who will maintain the routers?
     Response: NISN is responsible for all the elements associated with the network (hubs, cables, and routers…).

7) Who will monitor the PTPs for failures?
     Response: The customer at Mission Operation Center is responsible for reporting interruptions in data transfer to the NCC. The NCC with the help of WSC is responsible for troubleshooting the failures.

8) How will the scheduling process work?

Response: The scheduling process is manual. Schedules will be updated daily, but changes will be allowed at the schedulers' discretion during the day after the initial update. A delete capability is being implemented. The possibility of a global delete capability in case of slip was proposed. Analysis is being done on the complexity of the implementation for this enhancement.

For customers who do not have an established electronic way to schedule, a schedule confirmation must be sent including information about channel allocation. This operational scenario will require extra effort from NCC schedulers. More details can be found in the Ops Concept document, accessible on-line.

9) How will bandwidth be managed?

Response: NISN will manage bandwidth during the mission definition phase.

10) Is there a capability for simulation?

Response: Simulation is not a requirement on the WDISC and will not be implemented during this phase due to the complexity of implementation as well as the added load on the NCC scheduling operation and the extra bandwidth required.

11) How long is the data going to be required?

The requirement states that data will be kept for 50 hours in a case of data transmission outage.

12) Can the WDISC support multiple customers?

Response: the WDISC can support multiple customers requesting data simultaneously as described in response to question 2.

13) Can the customers use both PTP's?

Response: Customers can connect to both PTPs (prime and backup) on the data and control ports. However customer must send the switch control characters to only one of the PTPs.

14) Could the desktop properly set the switch?

Response: Both PTPs have the same desktop and both are activated in the same way from the timer software. However it would have been conceivable that the switch be set during the daily schedule from the NCC. This idea was abandoned since it would not accommodate a PTP failure that would occur after the scheduling was done.

15) Does the switch have redundant power supplies?

Response: Nothing associated with the switch is redundant. A spare switch set will be provided to mitigate the situation.

16) Does WSC have access to all TCP/IP training?

Response: GTE does not have access to TCP/IP CBT.

17) Who will coordinate information about problems with the system?

Response: The team lead will be responsible for providing a distribution list to the test team members and will be responsible for coordinating any information that needs to be distributed further.

18) Who has information to write the EC's at WSC?

Response: The team lead is the point of contact for providing the necessary information to assist in writing the EC, and is responsible for providing additional details and block diagrams necessary for completion of the EC. The team lead is also responsible for the coordination with NISN.

19) Who will write the operational documentation?

Response the operational documentation had not been taken into consideration. The team lead is responsible for coordinating this task and adjusting the schedule accordingly. Someone needs to be given the task to determine how extensive the changes to the documentation will be.
Personnel involved in testing the equipment will likely write the procedures. This will be determined at a later date.

20) How will customers choose between the WDISC and the Open IONet Service Capability (demand access)?
Response: Both systems require similar interfaces; however, the Open IONet Service Capability is not yet redundant and does not offer the security features of the closed side as secure as the WDISC. The Open IONet Service is part of a greater scheme that is still evolving. Managerial direction will be needed to determine the level of connectivity appropriate between those two systems.

Prior to the review, the NIA team presented a list of operational concerns. They are as follows:

1. The NCC scheduling operator manual intervention as well as the means to perform their tasks and from where (i.e., PTP schedules, scheduling playbacks).

2. The NCC PA manual intervention as well as the means to perform their tasks and from where (i.e., monitoring events, building desktops for the
PTP's, fault isolation).

3. No delete capability regarding the PTP schedule.

4. Operations involvement in the planning and development of this system.

5. How is the Bandwidth being regulated and by whom ?

6. Examine operational proficiency metrics and negotiate as needed.

7. If a stand-alone HP is being installed in the NCC for the scheduler, will this same piece of equipment going to be utilized by the PA for their task and will it be readily accessible to both operators?

8. Who maintains and is responsible for the WDISC hardware/software at the WSC and the applicable hardware/software at the NCC?

9. Will the customer have the capability and means to differentiate and resolve their schedule from one ground terminal to another in case of a planned or unplanned handover ?

Most of those concerns were addressed during the presentation. A meeting will be planned to work the remaining issues.

Conclusion:

A version of the review, in addition to all current documentation, is available from the WDISC Web page at URL:
    http://nmsp.gsfc.nasa.gov/WDISC

Comments pertaining to this presentation should be addressed to:
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Thank you for your participation in this review. Your ideas and comments are very helpful. I am always open to any idea that could improve the implementation or operation of this system.